

PATENT SPECIFICATION

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COMPLETE SPECIFICATION

Improvements relating to Pipe Couplings

We, D. NAPIER & SON LIMITED, a Company registered under the Laws of Great Britain, of 211, Acton Vale, London, W.3, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to pipe couplings or connections of the kind used for connecting the end of a pipe detachably in a fluid-tight manner to a member, hereinafter called the passage member, which
15 contains a passage with which the pipe is to communicate and usually lying approximately at right angles to the end of the pipe.

20 The object of the invention is to provide an improved pipe connection of this kind for use where a simple right-angle or similar bend cannot readily be used.

Hitherto such connections have generally been made by a so-called banjo connection. Such connections are, however, comparatively expensive to make, call for accurate machining of comparatively large surfaces and are difficult to maintain fluid-tight if inaccuracies or distortion
30 are present.

According to the present invention, a pipe coupling of the type referred to comprises a passage member containing a passage to which the pipe is to be connected
35 having a port in a lateral wall thereof with the outer end of the port surrounded by a seating surface, a strap member surrounding the part of the passage member in which the port is formed and having a screw-threaded tubular housing projecting laterally therefrom and formed to contain
40 a nipple formed on or secured to the end of a pipe, the nipple having at its end a seating surface for co-operation with the
45 seating surface on the passage member, and a screw-threaded thrust collar engag-

ing the screw-threaded part of the housing and acting on the nipple to clamp it to the passage member with the two seating surfaces in engagement.

The invention is particularly applicable to arrangements in which the end of a pipe is to be connected to a passage in a cylindrical member projecting from a casing or housing and, for example, itself secured within the housing by a thrust ring or the like surrounding it and engaging a flange thereon and where for this or other reasons the formation of a right angle bend at the outer end of the passage member itself is impossible or inconvenient, and one construction according to the invention as applied to such an arrangement is illustrated by way of example in the accompanying drawings in which,

Figure 1 is a sectional side elevation in a plane containing the axis of the passage member, and

Figure 2 is a section on the line 2—2 of Figure 1.

In the construction illustrated the apparatus comprises a cylindrical passage member A having a fluid passage A¹ therein closed at its outer end while the inner end of the passage member extends into a casing B to or from a point or points in the interior of which liquid is to be fed through the passage A¹.

The passage member A is provided with a flange A² on which bears a thrust collar C internally screwthreaded to engage an externally screwthreaded hollow boss B¹ on the casing B through which the passage member A passes, a packing ring C¹ conveniently being arranged between the thrust collar C and the flange A² to provide a fluid tight seal.

Formed in the outer end of the passage member A is a lateral port D extending from the passage A¹ and opening through a flat surface D¹ which is formed in the

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cylindrical outer end portion A³ of the passage member A and lies in a plane tangential to the surface of an imaginary cylinder of smaller diameter than that of the cylindrical end portion A² of the passage member A. It will be seen that the flat surface D¹ thus lies between circumferentially complete portions A⁴ on the outer cylindrical portion of the end portion A³ of the passage member A.

Closely surrounding the end portion A³ of the passage member A including the circumferentially complete portions A⁴ is a strap member E having an internally screwthreaded tubular housing E¹ formed integral with and projecting radially from it. The housing E¹ is formed as shown to accommodate a nipple F formed on the end of a pipe F¹, this nipple having a flat end seating surface F² which is arranged to be pressed into close sealing engagement with the part of the flat surface D¹ round the port D by means of a thrust collar G which is externally screwthreaded to engage the screwthreaded interior of the housing E¹ and bears through a thrust washer F³ upon a shoulder on the rear part of the nipple F. In some cases the thrust washer may be dispensed with. The seating surface C² of the nipple F is thus pressed into firm sealing engagement with the surface D¹ which constitutes a co-operating seating surface round the port D whereby the bore of the pipe F¹ is connected in a fluid tight manner to the passage A¹.

It will be seen that the strap member E does not have to make a close fit with the end A³ of the passage member A and in fact that the only surfaces which have to make a close sealing fit with one another are the seating surfaces F² and D¹.

What we claim is:—

1. A pipe coupling of the kind referred to comprising a passage member containing a passage to which a pipe is to be connected having a port in a lateral wall thereof with the outer end of the port surrounded by a seating surface, a strap

member surrounding the part of the passage member in which the port is formed and having a screwthreaded tubular housing projecting laterally therefrom and formed to contain a nipple formed on or secured to the end of a pipe, the nipple having at its end a seating surface for co-operation with the seating surface on the passage member, and a screwthreaded thrust collar engaging the screwthreaded part of the housing and acting on the nipple to clamp it to the passage member with the two seating surfaces in engagement.

2. A pipe coupling as claimed in Claim 1, in which the screwthreaded tubular housing on the strap member is internally screwthreaded while the screwthreaded thrust collar is externally screwthreaded and acts at its inner end either directly or through a thrust washer on a shoulder on the nipple.

3. A pipe coupling as claimed in Claim 1 or Claim 2, in which the co-operating seating surfaces are flat.

4. A pipe coupling as claimed in Claim 3, in which the part of the passage member where the lateral port is formed therein is of externally cylindrical form and the flat seating surface lies in a plane tangential to the surface of an imaginary cylinder of smaller diameter than the external diameter of such part of the passage member and between circumferentially complete portions of the external cylindrical surface of such part of the passage member.

5. A pipe coupling as claimed in Claim 4, in which the strap member closely surrounds the part of the passage member in which the lateral port is formed including the circumferentially complete parts between which the flat seating surface lies.

6. A pipe coupling constructed and arranged substantially as described and illustrated in the accompanying drawings.

KILBURN & STRODE,
Agents for the Applicants.

PROVISIONAL SPECIFICATION

Improvements relating to Pipe Couplings

We, D. NAPIER & SON LIMITED, a Company registered under the Laws of Great Britain, of 211, Acton Vale, London, W.3, do hereby declare the nature of this invention to be as follows:—

This invention relates to pipe couplings or connections of the kind used for connecting the end of a pipe detachably in a fluid-tight manner to a member, herein-

after called the passage member, which contains a passage with which the pipe is to communicate and usually lying approximately at right angles to the end of the pipe.

The object of the invention is to provide an improved pipe connection of this kind for use where a simple right-angle or similar bend cannot readily be used.

Hitherto such connections have generally been made by a so-called banjo connection. Such connections are, however, comparatively expensive to make, call for accurate machining of comparatively large surfaces and are difficult to maintain fluid-tight if inaccuracies or distortion are present.

According to the present invention, a pipe coupling of the type referred to comprises a passage member containing a passage to which the pipe is to be connected having a port in a lateral wall thereof with the outer end of the port surrounded by a seating surface, a strap member surrounding the part of the passage member in which the port is formed and having a screwthreaded tubular housing projecting laterally therefrom and formed to contain a nipple formed on or secured to the end of a pipe, the nipple having at its end a seating surface for co-operation with the seating surface on the passage member, and a screw-threaded thrust collar engaging the screw-threaded part of the housing and acting on the nipple to clamp it to the passage member with the two seating surfaces in engagement.

The invention is particularly applicable to arrangements in which the end of a pipe is to be connected to a passage in a cylindrical member projecting from a casing or housing and, for example, itself secured within the housing by a thrust ring or the like surrounding it and engaging a collar thereon and where for this or other reasons the formation of a right angle bend at the outer end of the member is impossible or inconvenient. In this case the cylindrical member is formed with a closed end and a lateral port in the pro-

jecting part thereof communicating with the end of the passage therein. Conveniently the port opens through a flat on the circumferential surface of the cylindrical member, this flat forming a seating surface for the end of the pipe. Freely surrounding the projecting end of the cylindrical member is a collar from which projects radially a cylindrical housing which is internally screw-threaded. The end of the pipe is formed with or has attached to it a nipple which with the part of the pipe adjacent to it is capable of lying within the cylindrical housing and has a flat end seating surface which will then engage the flat seating surface on the cylindrical member. The outer end of the nipple forms an annular thrust surface which is engaged by the inner end of an externally screw-threaded thrust ring surrounding the adjacent end of the pipe, engaging the screw-threaded bore of the housing and bearing, with or without the interposition of a thrust or packing ring, on the annular thrust surface so as to press the end of the nipple firmly into engagement with the flat seating face on the cylindrical member. Thus the annular seating surface at the end of the nipple makes a fluid-tight joint with the corresponding annular portion of the flat surface on the cylindrical member around the lateral port therein.

In an alternative construction, the two co-operating seating surfaces are frustoconical in shape, and are thrust together by similar means to make a fluid-tight joint.

Dated this 9th day of February, 1949.

KILBURN & STRODE,
Agents for the Applicants.

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